The 3rd KMI School：Machine Learning in Particle and Astrophysics

Contribution ID : 18

Breakout room #3: Status of neutrino event reconstruction in the NINJA experiment

Tuesday 17 Nov 2020 at 14:20 (01h40')

Content :

Neutrino-nucleus interaction is one of the major sources of the systematic uncertainty for neutrino oscillation experiments. To reduce the uncertainty, it is important to measure low momentum hadrons from the interactions. The NINJA experiment uses a nuclear emulsion detector called Emulsion Cloud Chamber (ECC). Thanks to fine granularity and good position resolution of the nuclear emulsion, ECCs can detect low momentum charged particles especially protons down to 200 MeV/c. However, ECCs cannot identify the muon track by itself, therefore a muon detector is placed downstream of them and a scintillation tracker and an emulsion multi-stage shifter are placed between them to connect the muon tracks. From November 2019 to February 2020, the NINJA experiment conducted its first physics run with 75 kg water target exposed to a T2K neutrino beam corresponding to 4.8e20 protons on target. The emulsion films are now under scanning process and the neutrino event reconstruction is ongoing. In this poster, we will show the status of muon track matching between the NINJA detectors and the neutrino event reconstruction using those muon tracks.

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